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again to a spherical form and remained passive as before. Other cases were noticed where actual division took place, but this was never connected with the amœboid movement.

As the days passed, other changes occurred; a considerable number, after discharging the green parts of their contents, threw out cilia and remained as long as watched in this amœba condition. Some of these were watched closely during change of form and color, particularly one, which corresponds very closely to one figured by Zopf, as one stage of the monad *Pseudospora parasitica*, Cienk., which is well known for its fondness for *Spirogyra* cells. There were at least three distinct species of amœba found among the remains of these bodies, but their origin in all cases could not be determined.

The singularity connected with these organisms is the lack of proof that they were the developed form of certain monad spores which had bored their way into the cell, together with the fact that if they did have such an origin, they did not develop into the amœba stage inside the cell, but simply gorged themselves with food and then issued forth in swarms to pass through other stages outside. This, with the peculiar hypertrophy exhibited, which in only one case seemed to be of any use to the parasite, are the two features considered worthy of mention.

DESCRIPTION OF PLATE CXXV.

- 1.—*Spirogyra* cell showing beginning of tube formation at *a*. Contents of growing portion colorless but granulated.
- 2, 3 and 4.—Cells showing different stages of this development. The inner lines show remains of chlorophyll bands.
- 5.—A cell showing the second method, viz., the growth of tube into the adjacent cell. This seen at *a*. *c*. Cell nucleus. *d*. Another tube growing outward.
- 6.—Cell with only a slight projection, but from which the green bodies *a* are about to escape.
- 7.—Green body after having escaped.
- 8 and 9 —Amœba forms originating from such bodies as 7.

On the Names of two Species of *Rhus*.

Rhus cotinoides, Nutt.—Regarding the synonymy of this plant, perhaps a few words may be said in addition to the revision already published by Prof. Sargent in *Garden and Forest*, iv. 340. As there shown, the earliest name for this plant is that of Nuttall, *Cotinus Americanus* (1842-'50), and ac-

according to Engler's division, the combination remains unchanged; but if *Cotinus* is made a section of *Rhus*, *Cotinus Americanus*, Nutt. becomes *R. Americanus* (Nutt). (= *R. cotinoides*, Nutt. MSS. in Herb).

The name *Rhus cotinoides*, by which this plant has long been designated, is commonly attributed to Nuttall; the latter, however, first applied it only as an herbarium name. It is said, moreover, to have been first published in 1860 (Chapman's Fl. Southern States); but the name doubtless belongs to Cooper, who published it in 1859 (Rep. Smithsonian Institution for 1858, 250), citing as a synonym, *Cotinus Americanus*, Nutt., which is equivalent to a formal publication.

Rhus typhina, L. (1760).—Dr. Britton has discussed (Bull. Torr. Bot. Club, xvii. 269) the synonymy of this plant, and points out that the first name, *Datisca hirta*, L. (Species Plantarum, 1037, 1753), which is commonly cited as a synonym of this plant, is debarred as the original name for the Staghorn Sumach, because of Engler's publication (DC. Monog. Phan. iv. 425, 1883) of the combination *Rhus hirta*, Harv. (Mss. in Herb. Kew) as a synonym of *Rhus tridentata*, Sond. Dr. Britton's decision would seem to be in strict accordance with the principle to be observed, "Once a synonym always a synonym."

But in following this principle to the letter, perhaps the fundamental meaning is overlooked. It is true that 1883 marks the first appearance of the binominal *Rhus hirta* (Harv. Mss. in Herb. Kew), Engler, and would thus appear to preclude the use of this name for our Staghorn Sumach. But before holding fast to this position, we must, it seems to me, inquire whether the specific term *hirta*—unquestionably first applied to our plant—can be lawfully appropriated in any other combination than in one for our species. This term is doubtless the permanent member of the binomial to designate our Sumach, and in whatever genus the species is finally placed, its original specific name *hirta*—if not antedated by an earlier application to another species—must belong where first applied. *Hirta*, therefore, never was a synonym, nor can it ever become one; and in forming from *Datisca hirta*, L., the combination *Rhus hirta*, Harv. l. c. for an African species of *Rhus* (*R. tridentata*, Sond.), an invasion was made on

a name unconditionally preoccupied. *Rhus hirta* (L.), to be legitimately written only for our Sumach, has never been proposed, and is not a synonym in fact—*Rhus hirta* (Harv. Mss. in Herb. Kew), Engler, l. c. is.

Moreover, in maintaining *Rhus hirta* (L.) for the Staghorn Sumach, we follow the ornithologists' interpretation of "Once a synonym always a synonym."

I should, therefore, propose that *Rhus typhina*, L. (1760) be replaced by *Rhus hirta* (L.) (= *Datisca hirta*, L., 1753), not *Rhus hirta* (Harv. Mss. in Herb. Kew), Engler (1883).

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[Mr. Sudworth's notes touch on the question of what importance is to be placed on the publication of a name as a synonym. His first-mentioned species appears to have been first alluded to in print by Torrey and Gray (Fl. N. A. i. 217, 1838), where it was doubtfully referred to the European *R. Cotinus*, L., and "*R. cotinoides*, Nutt. in herb. acad. Phila.," printed as a synonym. The appearance of this name dates then from 1838, and we fail to see any reason why it should not be maintained. It is quite equivalent to an author publishing two names for a plant, the first of which is preoccupied. His second case is similar, but not identical. *Rhus tridentata*, Sond., should in my view not stand, on account of the earlier publication of *Rhus tridentata*, Thunb., which would bring in *R. hirta*, Harv., for *R. tridentata*, Sond. —N. L. B.]

Notes on Peronosporaceæ.

The following list of Peronosporaceæ includes species found in the vicinity of Brookings, S. D., during the summer of 1891. The region covered is that included within a radius of five miles from the city. Specimens of all the species have been collected upon the college farm, also, which lies close to the city and is situated upon prairie uplands.

PERONOSPORA ARTHURI, Farlow.

This species was very plentiful during July on *Oenothera biennis*. Plants growing in the wild flower garden suffered most. Many plants were entirely stripped of their leaves.